A PUBLICATION OF THE NORTH AMERICAN MYCOLOGICAL ASSOCIATION

The Mycophile Quarterly

JANUARY FEBRUARY MARCH 2024

The Voucher Collection Project

CELEBRATES QUARTER CENTURY OF COMMUNITY SCIENCE

VAMONOS!: NAMA_MX24

NAMAZONA REGIONAL FORAY

CHOPPED-STYLE CONTEST RETURNS

DUKE UNIVERSITY TO DISMANTLE HERBARIUM

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of the newsletter are available in the Publications section of the NAMA website, www.namyco.org

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Please contact Mycophile@namyco.org with your article proposals and ideas. We'll get you published!

Submissions
Submissions must be received in editable-document format (do not send pdfs), with photos attached separately (not embedded) and photo credits provided.

NAMA Toadstool Picker's Review

Our lives revolve around fungi, even when we aren't hunting them.

NAMA President Trent Blizzard and Web Admin Kristen Blizzard

I don't normally write about myself in this column, focusing instead on NAMA business. But as I sit here pondering this winter edition, I can't help to think about how our lives revolve around fungi, even during months when we aren't hunting them.

Hunting Mushrooms in the Off Season

If the mushrooms don't come to us, sometimes we have to go to them! For Kristen and me, that means going to SOMA camp in Northern California every January. California mushrooms fruit well in January and we love to chase delicious fungi like candy caps (*Lactarius rubidus*), black trumpets (*Craterellus cornucopioides*) and yellowfoot (*Craterellus tubaeformis*). I believe California's candy caps are

Craterellus tubaeformis, "yellowfoot"

superior in smell to the Oregon or Washington versions, no matter what the experts say. They make my mushroom-collecting basket smell like maple syrup for years! We also are delighted to find a few more obscure edibles like pig's ear (*Gomphus clavatus*) or beefsteak (*Fistulina hepatica*) and medicinal mushrooms such as turkey tail (*Trametes versicolor*) or agarikon (*Fomitopsis officinalis*) for our tinctures. There are several awesome events in California every year. If you are not a West coaster, consider a trip next January built around a mushroom fair, foray or camp.

Craterellus cornucopioides, "black trumpet"

Prepping for Next Year

My main activity in January and February is map study because we release our annual burn-morel-probability maps near the end of February. This means spending days studying the terrain inside every wildfire West of the Rockies (11 states), looking for the perfect combination of tree cover, tree species, elevation, slope and aspect as well as analyzing burns for access roads and public availability.

I rate each forest fire on a 4-star system. For the 4-star burns, we color-code every acre inside the burn perimeter based on fire morel probability factors (such as tree cover, slope, aspect) and also create a burn-severity map using infrared photos of the burn, before and after. We focus on the big Western burns but our maps include burns in Alaska, Canada and the *entire* continental United States. Because many morel hunters want to hunt where forestry and logging has disturbed the ground, we also track thousands of recently logged acres, organizing and mapping those "stewardship" areas each year.

I love doing all this "arm-chair" research almost as much as I love hunting in the burns! I also enjoy deciding which areas we will go hunt this spring based on our research. Over the years we have hunted burns in Montana, Idaho, Oregon,

California and Colorado. The crazy part? I am severely allergic to morels, and can NOT eat them! I sure do love hunting and picking them though—the mania is real!

NAMA in the Off Season

We have been busy! Personally, I am trying to help NAMA schedule 12 virtual events for our community during February, March and April. If you have not seen the slate of events each month hosted via Zoom, please check namyco.org for details.

The most notable NAMA Winter activity is foray planning. This year we added a *third* foray into the lineup. The foray teams have been busy!

- Zachary Hunter is the planner for our NAMA_MX24 event in Mexico August 2nd-9th. This is a weeklong deep-dive into Mexico's mushroom culture based at a lovely resort in the mountains of Mexico. Check this off your bucket list in 2024!
- Michael Colisimo and Jess Starwood are co-planners for NAMAZona 2024 in Arizona, August 22nd to 25th. This foray is a food-focused event at a boutique resort featuring some incredibly talented chefs.
- Ken Buegeleisen is the planner for our Annual Foray, Pacific Northwest NAMA Camp, Oct 31st to Nov 3rd outside of Randle, Washington. Our annual event is awesome and has something for everyone!

We also have lots of dynamic committees who meet once a month. If you would like to get involved with one of our committees or help with a foray, just drop me a line at president@namyco.org. In the meantime, enjoy your off season!

Trent Blizzard

Trent Blizzard
President

NAMA Forays

Embark on an Immersive Experience with NAMA Forays.

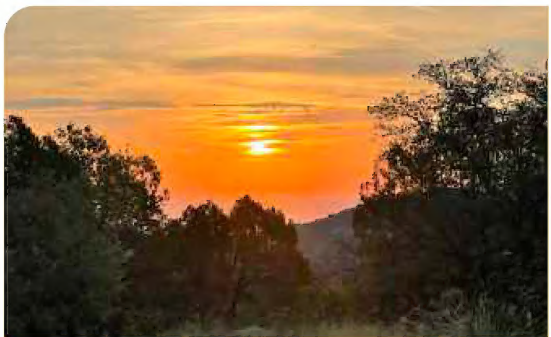
NAMAZona: Regional Foray in Arizona

BY JESS STARWOOD, CULINARY ARTS COMMITTEE

Chad Hyatt, author, *The Mushroom Hunter's Kitchen* (photo: Rosa Lara Fernandez)

There ARE mushrooms in Arizona! Discover the culinary treasures of Arizona's mountains at NAMAzona, August 22nd to 25th, 2024.

In the heart of the arid landscapes that define Arizona, a culinary surprise awaits those willing to venture into the mountains this summer. Known for its cacti and deserts, Arizona is the last place you'd expect to find a bounty of mushrooms. Yet thanks to the transformative power of the summer monsoon rains, the mountains come alive with an unexpected and abundant variety of fungi. This summer, we invite you to embark on a unique gastronomic journey that promises to change how you think about Arizona and mushrooms.



Arizona mountain sunset at Strawberry Inn (photo: Jess Starwood).

Strawberry Inn landscape (photo: Jess Starwood).

NAMAzona, cohosted by the Arizona Mushroom Society and NAMA, brings together mycophiles, culinary enthusiasts, foodies and anyone with an adventurous palate. Set against the stunning backdrop of Arizona's mountainous landscape, with lodging at a brand new boutique hotel in the small town of Strawberry, this event will not just be a feast for your taste buds but also for your eyes.

Aureoboletus russellii (photo: Jess Starwood).

Leading the culinary exploration is renowned chef and author Chad Hyatt (author, *The Mushroom Hunter's Kitchen*), who is celebrated for his innovative approach to mushroom cuisine. Hyatt, along with other distinguished local fungi chefs, will be crafting multi-course fine dining experiences inspired by the flavors of Arizona each night. Each dish will showcase the versatility and richness of mushrooms, turning locally foraged fungi and wild flavors into gourmet masterpieces.

Attendees will learn about Arizona's unique and fascinating fungi—a remarkable convergence of West Coast, Rocky Mountain and East Coast species. There will be forays led by local experts, culinary demonstrations and workshops offering a hands-on approach to understanding and appreciating the diverse and unique mushrooms of the region.

This event is more than just a meal; it's an immersive journey that combines the beauty of Arizona's landscapes with the exquisite flavors of its unexpected abundance of wild flavors. Whether you're a seasoned mycophile or new to mushrooms, this event offers an exclusive experience that tantalizes the senses and enriches your culinary skills. After forays among the pines, return to the rustic-chic Strawberry Inn to relax and reflect on the day's discoveries. Gather around a crackling fire pit under the stars, enjoy one of the property's many hot tubs, share stories, and savor the tranquility of the mountains.

Don't miss this chance to explore the hidden culinary treasures of Arizona's mountains. Join us for an unforgettable adventure where fine dining meets the wild. Registration coming soon!

Airstream accommodation at Strawberry Inn (photo: Jess Starwood).

VAMONOS! NAMA Heads Back to Mexico

BY ZACHARY HUNTER, CULINARY ARTS COMMITTEE

PHOTOS: BRUCH REED

If you are anywhere near the orbit of anyone who took the leap to attend this first-of-its-kind NAMA-members-only luxury mycological foray in Mexico in 2023, you know, because they haven't shut up about it! What started out as a tantalizing idea in early 2022 became a pivotal and ground-breaking interconnection between mycologists in Mexico and its northerly neighbors; long-time-coming connections between the Indigenous communities of Mexico State, attendees and visiting chefs, connections that will last a lifetime.

Attendees came from all over North America, and all shared the wonder and awe at what The Fungivore and Symbiosis Viva la Funga orchestrated and directed! NAMA Chief Operating Officer Bruch Reed penned a rhapsodical account of his experience for the July/August/September Mycophile Quarterly and you can *view* the event program put together by the effervescent Mexican mycologist and event leader Ireri Montrer here: NAMA MX 23 Program.

The inaugural event went so well that we are doing it again! Join eminent Mexican mycologists, foray with several indigenous communities, learn first-hand about ethnomycology from people immersed in it every day; learn from Michelin-star chefs and celebrated foodies in a Mycophagy Lab presentation of cooking mushrooms, all while situated in the most luxurious settings for a mushroom foray: the 5-billion Star Hotel Rodavento in Valle de Bravo, which will be home base for our full 5 days together, is a setting without parallel: nestled in mixed pine and oak cloud forest at 7,500 ft elevation, this ecoresort all but disappears into the natural surroundings, overflowing with a variety of fungi over the 40-acre wild landscape.

The registration process includes a detailed questionnaire that helps both to determine if the event is right for you and also helps organizers arrange the details for attendees. If you are interested, please click this link to begin the process: NAMA MX24 Questionnaire.

RODAVENTO
HOTEL • SPA • AVENTURA

AMS members celebrate a successful foray.

NAMA-Affiliated Club Spotlight: Arizona Mushroom Society

BY SANDRA PATTON, CLUB RELATIONS COMMITTEE

In August of 2024, NAMA mycophiles from across the continent will be flocking to Arizona to seek out mushrooms at the **NAMAZona 2024 Regional Foray,** August 22 to 25. When most people think of Arizona, images of hot, dry, sandy, environments such as the Grand Canyon likely come to mind; not exactly ideal mushroom habitat—but the word about the diversity and abundance of mushroom species in the state's forested mountain areas is slowly getting out, through the 1,100+ members of the very active and enthusiastic Arizona Mushroom Society (AMS)!

AMS ID tables.

While some mushroom clubs are only active during the months when mushrooms are fruiting in their area, AMS takes a different approach. They have programs and activities all twelve months of the year! Perhaps this is because it might be difficult to attract members if they were only active three months of the year. Yes, they only have three months of prime mushroom season, about one month in the spring after the snow melts and two months at the end of summer, when the monsoons appear. But that little detail does not deter this hardy group.

To clarify just how hardy this group is, check out this announcement for their annual spring snowbank fungi foray:

> *"Hot, Straight Uphill, and No Edible Mushrooms Foray! In Arizona, we are lucky to have a few vestigial snowbank fungi populations in the highest elevations most years. While it is unlikely we will find any edibles, this foray will be a unique opportunity to discover, document, and learn more about the rare phenomenon of snowbank fungi in the desert southwest. We will be recording our finds on the iNaturalist app, which will allow us to contribute to the broader scientific understanding of the range of various snowbank fungi species. Please only register if you are in good health and feel comfortable with physical exertion at elevations above 10,000 feet."*

Needless to say, AMS dedicates those prime three months to teaching via as many hands-on forays they can accommodate. During the remaining months, members can look forward to presentations and workshops with artists, mycologists, chefs and others who share their unique and inspiring mushroom knowledge. Because they are such a large group with members all over the state, many of their activities occur virtually. This creative group even figured out how to teach a hands-on DIY mushroom cultivation workshop over Zoom.

Else Vellinga mycologizes at the 2022 AMS Annual Foray.

The dispersed AMS membership also provided the incentive to develop an AMS merchandise storefront. They did their research and chose Printify, which provides a wide selection of products, offers print on demand, ships anywhere in the world and integrates with all of the major online storefronts. They even now offer Printify pop-up stores. (No, this is not an advertisement for Printify—but innovative ideas like this that offer mushroom clubs an avenue to create and sell club merchandise

AMS swag for sale.

with no upfront costs and no back-end delivery or customer service hassles is news that needs to be shared—and the NAMA Club Relations committee plans to do exactly that!)

Back to the favorite subject of forays! The highlight of every year is when over 300 AMS members gather in August in the White Mountains for their 3-day annual foray. The event is focused around small group forays led by experienced AMS members and invited expert guests like Dr. Else Vellinga and Alan Rockefeller. Fungal finds are collected, identified and later discussed at the Sunday morning table talk. Friday evening activities include a mushroom social, a mushroom tasting, and a mushroom-vendor area. The foray dinner, followed by a keynote speaker presentation by a guest expert, is the highlight of Saturday evening. As evidence of the fungal diversity in Arizona, check out the species list from the 2023 annual foray.

Quietly in the background of all the fun and educational activities is a cadre of volunteers that keep AMS running. A few of these include: Mike Colosimo (President), Jess Starwood, Chris May, Mike Dechter, Donna Walton, Brent Ewasiuk, Chad Borseth, Spencer Wimmer, Mike Van Note, Adam Bailey, Morgan, Katy Babcock, Ross Babcock, Jason Sartor, David Dumins and Lisa Goodwin.

Of special note is Terri Clements, chair of the AMS Scientific Committee. Terri spends countless hours documenting and identifying the fungi of Arizona. Since 2016, she has vouchered just under 1,400 macrofungi for the Robert L. Gilbertson Mycological Herbarium at the University of Arizona in Tucson (ARIZ). Many of these specimens are collected on AMS forays. Joseph Myers, the assistant curator of ARIZ, calls the vouchered collection the pride of the herbarium. With funding assistance from AMS, 850 of the vouchered specimens have been submitted for DNA sequencing, with additional funding earmarked for 300 DNA sequences in 2023.

All of this work is paying off. According to Terri, about 25% of the sequenced collections are confirmations of species that were thought to occur in Arizona.

AMS Past President Chris May, current President Michael Colosimo and other AMSers perform microscopy.

The other 75% are collections that represent species occurring outside of their expected range and species that are either newly described or likely undescribed.

In addition to dedicating funds for DNA sequencing, AMS funds the annual Dr. Chester Leathers Graduate Student Scholarship in honor of the club's founder and its president from 1985 to 2015. However, their generosity does not stop there. They have also provided support to the Flagstaff Arboretum, Nature Conservancy's Hart Prairie Preserve in Flagstaff, lichen research through the ASU Natural History Museum and Herbarium, and the health and community services of the White Mountain Apache Tribe, on whose ancestral homelands they foray on during monsoon season.

To learn more about Arizona mushrooming, check out this video from the Modern Forager Stories series; NAMA President Trent Blizzard talks with former AMS President Chris May about the topology, climate, habitats and mushrooms of Arizona. To explore more about AMS or connect with their members, you will find them online at the AMS website, on Facebook, Twitter, and Instagram. On iNaturalist check out these projects: AMS Mycoflora Project, Fungi of Arizona, and many more foray projects.

MQ NAMA News

Instagratitude!

BY KATHY YERICH, MARKETING CHAIR

Like fungi in wet weather or a mushroom grow kit ready to burst, the NAMA Instagram account has really hit its stride! Thank you to the talented takeover artists from all over the world for helping our account be fruitful and grow to *more than 24,000 followers*!

Below is a list of the Instagram Takeover Artists who provided fantastic fungal fruiting from November 2023 to mid-February 2024. Follow @northamericanmyco to consume the visually delectable mushroom content!

INSTAGRAM TAKEOVER ARTISTS

Garrett Crosby	**@cakewalkcakewalk**
Mallory O'Donnell	**@mallorylodonnell**
Hernán Castro	**@desert_alchemist**
Emma Reigel and Gabriel Harrison	**@gowinvalleyfarms**
Sarah Le Tourneau	**@forest_apsara**
Savanna Schwartz	**@foraging_ky**
Zachary Hunter-Williams	**@the_fungivore**

Call for Nominations: 2024 Lincoff and Knighton Awards

BY PHILIP D. CARPENTER, AWARDS COMMITTEE CHAIR

Gary Lincoff Award for Contributions to Amateur Mycology

NAMA's Gary Lincoff Award for Contributions to Amateur Mycology is given annually to recognize a person who has contributed extraordinarily to the advancement of amateur mycology. Its recipients have often extensively conducted workshops, led forays, written or lectured widely about mushrooms and identifying mushrooms, all on a national or international level. In 2015, the name of this award was officially changed to recognize the contributions of the late, great Gary Lincoff.

Gary Lincoff

Nominations for this award should include a description of the nominee's accomplishments and contributions to the field of amateur mycology, and may include unlimited testimonials of support. A name alone is not a sufficient nomination; neither is a profile on a website. The recipient must be living at the time of the award. Nominees who are not selected to receive the award are automatically re-nominated for 4 additional years, after which the nominee's name has to be resubmitted. It is incumbent upon the nominator to keep track of this timeline and it is advised that a previous nominator resubmit additional information to update the NAMA Awards Committee regarding a nominee's current additional accomplishments.

Selection among nominees is made by the voting of the most recent past award winners. The award includes a plaque and lifetime membership in NAMA.

The Harry and Elsie Knighton Service Award

The Harry and Elsie Knighton Service Award was established by the NAMA Board of Trustees to recognize and encourage individuals who have distinguished themselves in service to their local NAMA-affiliated mushroom clubs. It is named for the Knightons, whose efforts began the North American Mycological Association in 1961.

The annual award consists of a plaque; publicity for the winner and club in *The Mycophile Quarterly*, a one-year membership in NAMA as well as registration, room and board for a NAMA Annual Foray (must be used within 3 years of receiving the award).

Each year's recipient is selected by a group of the award's living recipients. Every NAMA-affiliated mycological society may nominate one candidate whom it feels has performed meritorious service during the current or preceding year(s), which should be described in detail.

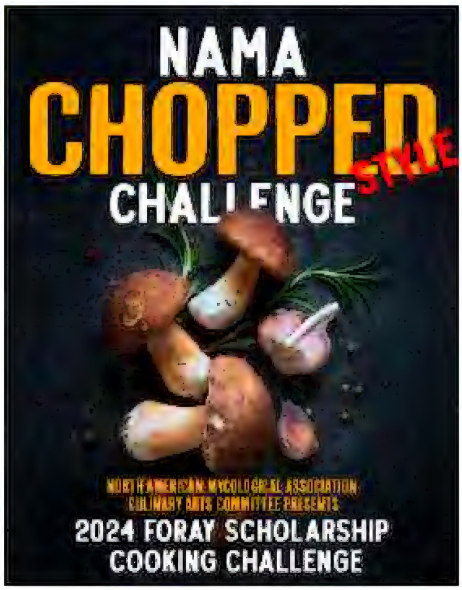
Unselected nominees are automatically renominated for two additional years. Updated nominating information is encouraged for those previously nominated.

Nominations for either of these awards are accepted until June 1st, 2024 for the 2024 award year. Please send a single copy of the nomination for either award by U.S. Mail and/or email to:

Philip D. Carpenter, NAMA Awards Committee Chair
6447 Hidden Oaks Lane
Aptos, CA 95003-9632
aptosphil@gmail.com

Culinary Arts Committee 2nd Annual *Chopped*-style Challenge 2024

BY JULIE SCHREIBER, CULINARY ARTS COMMITTEE CHAIR



By now, if you are any kind of cook or foodie, you are familiar with *Chopped,* the thrilling tv show featuring the ever-more-ridiculous challenge of incorporating seemingly impossibly incompatible ingredients into a coherent dish. Well, the NAMA Culinary Arts Committee is giving you a chance to shine in your own competition! Best part is, you could leave out the salt and we wouldn't know; your description, photos, creativity, and presentation will be the criteria for judging. ANYONE can participate but only one will win—ARE YOU READY?

One winner will receive a scholarship for registration, room and board, at the prevailing double-occupancy rate, to attend Pacific Northwest NAMA Camp, NAMA's 64th Annual Foray, to convene in Randle, Washington, October 31 to November 3. Recipes and photos will be featured in *The Mycophile Quarterly*; you may click here and flip to p. 44 to view last year's finalists: July/August/September 2023 Mycophile Quarterly.

Required Ingredients:

1. Any Mushrooms (fresh or dried, wild or cultivated)
2. Miso
3. Cream Cheese
4. Maple Syrup
5. Parsnip
6. Potato Chips

2023 *Chopped*-style Challenge first place went to Candycap Tart, by Jules Amanita.

***Chopped*-style Challenge Contest Rules**:

1. All required ingredients MUST be used in one cohesive dish.
2. As long as you use the five ingredients and mushrooms, you can use ANY OTHER ingredients you choose.
3. You may use staples from your own kitchen or shop for other ingredients for your dish: butter, cream, oil, onions, garlic, cheese, or herbs, for example. However, please note that leaning too heavily on these palette-pleasers might not take the cake… be creative!
4. Your pictures or videos can be posted on Facebook or Instagram. Please use the hashtag: **#NAMAChopped2024** so that we will find your dish!
5. In addition to posting on social media, please send in the following information to CulinaryArts@namyco.org: a jpg photo of your dish, a written recipe and, of course, your name and contact info. This info allows us to find you and let you know if you have won!
6. Judging will be performed by the NAMA Culinary Arts Committee members; please have your photos online and tagged **no later than midnight Central Time on June 1, 2024**.
7. Judging will be based on the photo, description, presentation, and creativity.
8. We will announce the award recipient on June 24, 2024.
9. In order to use the scholarship award, please note that you must have never attended a NAMA Annual Foray event before; however, if someone who HAS attended before ends up winning, they will have the option to pass on the scholarship slot to someone they choose who has not! Or they can just decline the award in favor of the next finalist who has not attended. FUN, and spreading mycofellowship, are the point of this contest.

Have questions? We are happy to help you resolve them; please contact us at CulinaryArts@namyco.org.

#NAMAChopped2024 #ChoppedChallenge #Mycophagy #Fungi #Mushrooms #EdibleMushrooms #MushroomCookery #NorthAmerica

Announcing North American Commercial Mycoblitz, March 10th to 17th

BY MANDIE QUARK, DNAMA DNA SEQUENCING COMMITTEE

Have you ever wondered about the identity of mushrooms you buy at the grocery store? What are they really? Are those boletes really *Boletus edulis*, aka porcini? Does your reishi powder actually contain *Ganoderma lucidum*, or another unknown polypore?

Well, the first-ever **North American Commercial Mycoblitz** is your chance to find out! Help us discover what you're putting in your shopping carts.

We are offering FREE DNA Sequencing for all mushrooms or mushroom products found at commercial retailers such as grocery stores, supplement shops or farmers markets across North America during the week of March 10th to 17th.

This opportunity could be a game changer for both science and your shopping list!

Scan the QR code on the flyer to find out more information about how you can participate in the first-EVER North American Commercial Mycoblitz!!

FUNGAL LIFE IMITATES NAMA FORAY LOGO ART

Image credit: Lohit Y.T.

BY BRUCH REED, CHIEF OPERATING OFFICER/*MQ* EDITOR

Last year's Appalachia NAMA 2023 Annual Foray Logo Contest was highly competitive.

Last year's Appalachia NAMA 2023 Annual Foray Logo Contest was highly competitive, with 53 entries, and ultimately came down to a narrow vote by NAMA's Executive Board to adopt Tiffany Theden's exuberantly whimsical entry depicting a native North Carolina frog seeming to sprout mushrooms from its posterior, an image that inverts the iconic visual "toadstool" paradigm.

Recently, amid the Kudremukh mountain foothills, fungal life seems to have imitated Theden's art in clear photos capturing what appears to be a tiny but recognizable mushroom—genus *Mycena*, at first glance—sprouting sturdily from the flank of a specimen of *Hylarana intermedia*, known in India as "Rao's intermediate golden-backed frog." The astonishing, unprecedented find by Lohit Y.T., a World Wildlife Fund wetlands scientist, was announced in the January 28 edition of the journal Reptiles and Amphibians in a paper coauthored by Chinmay C. Maliye.

Full credit for the NAMA-relevant story angle goes to NAMA Web Admin Kristen Blizzard for pointing out how delightfully the incident embodies the aphorism! (Even if it does end up being just sassy subcontinental fun with photoshop).

Image credit: Lohit Y.T.

Tiffany Theden's winning entry in the Appalachia NAMA 2023 Logo Contest.

Image credit: Lohit Y.T.

MQ COVER ARTIST CHRIS CORVIDOPOLIS, SPORELUST, THE MUSHROOM TAROT ADAMS

Kicks off Kickstarter

BY BRUCH REED, CHIEF OPERATING OFFICER/*MQ* EDITOR

Snag a new creation by one of the mushroom community's most remarkable mycophilosophical-positive-messaging artists.

One of the mushroom community's most remarkable mycophilosophical-positive-messaging artists, Chris Adams of Corvidopolis/Sporelust/The Mushroom Tarot, generously donated his *Forest Walker* image for this quarter's *MQ* cover. Currently, Adams is live on Kickstarter with a campaign to raise publishing funds for a mushroom-themed deck of playing cards. He's calling it "Sporelust! Holy Shrump Playing Card Deck" and, as depicted in the photo above, it features morels as spades, porcini as hearts, black trumpets as clubs and *Amanita muscaria* as diamonds. As you can see in the included image, the artwork adorning these cards exemplifies Adams' unique genre, combining scientific accuracy with a lifelong fascination for 1960s counterculture artists, as well as taking significant inspiration from his own 1980s skate-punk youth. This project is live until 7:00 AM Pacific Time March 13, 2024, so rush to snag a delightful deck—or any of his other amazing offerings.

Click here to check out "Sporelust! Holy Shrump Playing Card Deck" today!

The Voucher Collection Project:

Celebrating 26 years of NAMA-supported Community Science

BY OLIVIA FILIALUNA (THEY/THEM), PATRICK LEACOCH (HE/HIM), WYATT GASWICK (HE/HIM), ANDREW WILSON (HE/HIM)

Introduction

Since 1997, the North American Mycological Association's (NAMA) Voucher Collection Project (VCP) has followed the values of "Collect, Preserve, [and] Study."

Introduction

Since 1997, the North American Mycological Association's (NAMA) Voucher Collection Project (VCP) has followed the values of "Collect, Preserve, [and] Study." The VCP, coordinated by NAMA's Voucher Collection Project Committee, has served these values by creating voucher specimens of North American macrofungal species' diversity, collected during NAMA foray events. In pursuit of this goal, VCP members participate in recording, photographing, and drying voucher specimens in order to preserve them in the herbarium of The Field Museum of Natural History in Chicago, Illinois. Over the years, the VCP has evolved to provide resources on how to collect samples for science (How to Collect Macrofungal Specimens for Scientific Research) while offering opportunities to train the next generation of mycology students, and has adopted new approaches to documenting fungal diversity in North America. The VCP Committee oversees much of the VCP's work, from managing Student Assistant scholarships to attend foray events, to overseeing the study and preservation of NAMA collections.

Through all of these efforts, the VCP has become an integral part of NAMA's Annual Forays, ensuring that important specimens are maintained for future research. In addition, the VCP remains a fantastic opportunity for learning and engagement in North American fungal diversity. 2022 represented the 25th year of collecting vouchers for the VCP (excluding 2020 due to COVID). To celebrate this anniversary, this article offers insight into the origins of the VCP, its growth over the years and a glimpse into the future for documenting fungal diversity across North America. It is our hope that by understanding the history of NAMA and its Voucher Collection Project, NAMA members will be more aware of this project as a resource and become more interested in engaging with the process.

Pre-Voucher-Collection-Project NAMA

From its inception, NAMA's main purpose has been to provide a time and place for fungal enthusiasts to connect and bond with one another. NAMA

primarily does this through its six decades (and counting!) of Annual Forays, committees and online resources. In the early years, the Annual Forays were held predominantly in midwestern states (Michigan, Ohio, and Minnesota), with scattered forays in New England (New Hampshire) and western states (Idaho) (Ref). As NAMA grew a wider membership base, forays started to be held in a wider variety of locations. In the 65 years since NAMA's inception, the activities of the forays have changed little. The Annual Foray continues to be an event where participants can gather over a shared fascination with mushrooms. These gatherings bely any differences based on personal background or profession, as NAMA has always been a group of fungal lovers as multifaceted in their interests as the organisms with which they are obsessed.

Image 1 1982 East Stroudsburg, PA - Keeping a species list at the NAMA foray. Photo by L. Gillman and provided by Michael Beug.

In the early forays, documentation of fungal diversity was handled by the Foray Recorder. Species were typically identified by taxonomic experts and amateur mycologists, including Dr. Alexander Smith, Dr. Orson Miller, Dr. Sam Mitchel M.D., Dr. Howard Bigelow, Allein Stanley and others. A list of all the species was then compiled in an effort to document species diversity (**Image 1**).

From 1961 to 1996, the treatment of specimens made by NAMA members mostly involved a "returned-to-nature" strategy; the only proof of their existence became a name on the species list. These lists provided a snapshot of the fungal diversity found during the gathering but excluded specific locations, collectors, identifiers—and did not correspond to specific collections that could be studied after the event. The Foray Recorder was responsible for compiling a list of all the species identified during the Annual Foray and then publishing it in the club's *Mycophile* newsletter, and/or its journal, *McIlvainea*.

VCP Inception to 1995

The limitations of species lists and the scientific opportunities of vouchering NAMA specimens was first discussed by Greg Mueller (then at The Field Museum) and Allein Stanley (NAMA President 1995 to 2000) over lunch at the 1995 Annual Foray, that year held in Bemidji, Minnesota. They were awed by

the diversity of collections found and then dismayed at their destruction as soon as the foray was over. Their angst inspired the idea to save a small portion of the collections for future fungal research. At the end of this conversation, Mueller and Stanley agreed to leverage their personal and professional influences to establish initial support for the Voucher Collection Project. Mueller, as a Curator of Mycology at The Field Museum, was able to convince the Botany Department to see the importance of these foray collections and agree to preserve them in the Field's herbarium. As NAMA President, Stanley was able to convince NAMA's Executive Committee to provide financial support for expenses during and after the Annual Foray, as well as support for the VCP's purpose and goals.

Image 2 2008 McCall, ID - Amateurs and professionals working the scopes. Clockwise from the front: Michael Beug, Jessie Glaeser, Jean Lodge, Cathy Cripps, Vera Evenson, and Adele Mehta. Photo provided by Cathy Cripps.

VCP Techniques

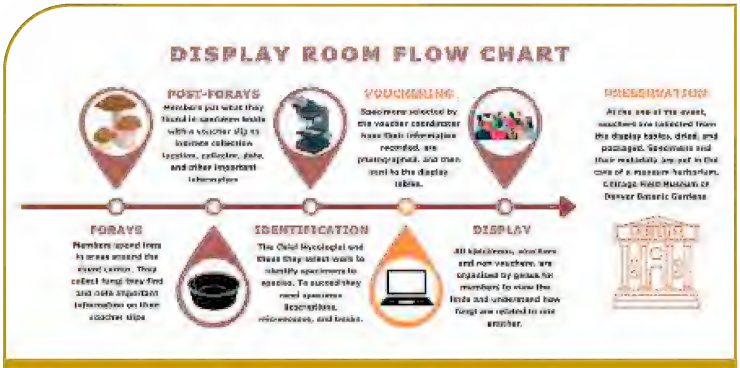


Figure 1. Display Room Flow Chart. Depiction of work done with specimens at NAMA's annual forays. Steps in orange, **vouchering** and **preservation**, are the responsibility of the VCP Committee and were only added to the flow when the committee formed in 1997.

The Voucher Collection Project became a part of the specimen flow (**Figure 1**; **Image 2**) for the 1997 Annual Foray at Copper Mountain, Colorado. The initial VCP Committee included the two founders (Mueller and Stanley), a Voucher Coordinator (John (Jack) Murphy), photographer, and anyone else willing to help shuffle and organize specimens. Due to Stanley's work, the VCP had funding for materials, such as herbarium boxes, as well as free attendance and travel support for the Voucher Coordinator. A few years in, the budget expanded to offer foray attendance to four student assistants in return for their help with the VCP, and has recently been expanded to include travel compensation for two additional student assistants.

The existing position of Foray Recorder became an integral part of the voucher process. Rather than just recording the names of all species found, the VCP

Committee tasked the recorder with logging all information found on a voucher's collection slip into a database. The responsibility of checking and updating species names, consolidating foray locations with geographic coordinates, and publishing a foray voucher report became the purview of the Voucher Coordinator once the foray was over.

The new Voucher Coordinator position came with the responsibilities of deciding which specimen is the "best representative" of the species (if multiple specimens are available) and ensuring that it is recorded, photographed, displayed, dried and then deposited at a designated herbarium. Since the VCP's inception, the Voucher Coordinator position is intended to be filled by someone employed by an institution with a fungarium (fungal herbarium). The task of boxing, labeling and accessioning hundreds of NAMA specimens each year has been an enormous task, and generally delegated to the institution's collections assistant and their crew of dedicated volunteers.

It is important to point out that finding the "best representative" of each species depends greatly on accurate identification of the fungi. The role of the Voucher Coordinator is to collect the best possible specimen of each species; this responsibility does not include species identification, which continues to fall on the "Chief," "Host," "Lead" or "Head" Mycologist. The role of Head Mycologist remains the most important and prestigious role at the forays. The ability of this person to not only identify species, but recruit other competent identifiers, has profound impact on the diversity captured at NAMA's forays.

Since its inception, the VCP Committee has been an active part of every Annual Foray and the occasional Regional Foray as well. The VCP Committee has ensured the preservation of "scientifically valuable collections," thus providing specimens for fungal research while also maintaining a record of NAMA's presence and impact on our understanding of fungal diversity in North America. Prior to 1997, collections saved from NAMA forays were done so only by a small number of individuals. As these collections were made with personal interests in mind, they usually did not capture an accurate picture of the overall fungal diversity at a specific time and place, but were collected to support the specific research questions of participating mycologists. Once the VCP Committee began its work, the number and diversity of specimens skyrocketed, with hundreds

rather than tens of samples being saved each year. Furthermore, the diversity of collectors expanded as well; more often than not, a different collector contributed each specimen, many of whom had never had their name recorded in the context of fungal research before.

Image 3 1997 Copper Mountain, CO - Voucher coordinator, Jack Murphy, taking photos of a voucher. Donated by David Lewis.

VCP Members

The Voucher Coordinator for the 1997 Annual Foray in Colorado was Jack Murphy, Mueller's then postdoctoral researcher (**Image 3**). Following the 1997 foray, Murphy transitioned to VCP Committee Chair until he left the committee after 2004. Patrick Leacock joined NAMA in 1988 and participated as the Foray Recorder before becoming Voucher Coordinator for the 1998 Annual Foray (**Image 4**). Leacock was selected because he was working as Mueller's new postdoc at the time. In 2005 Leacock became Chair of the VCP and served as Voucher Coordinator, running the VCP for 23 years. Many people have been the Foray Recorder over the years, but in 1999 the position became the responsibility of longtime NAMA member Adele Mehta (**Image 5**), a position she retains to this day.

Image 4 2001 St. John's - Patrick Leacock taking photos of a voucher specimen. Photo by Maggie Rogers and donated by Michael Beug.

Image 5 2007 Pipestem, WV - Adele Mehta, foray recorder, and Patrick Leacock, voucher coordinator. Photo taken by Robert Fulgency and provided by Cathy Cripps.

The VCP Committee cofounders, Greg Mueller and Allein Stanley, supported the committee as volunteers during the forays (**Image 6**). Greg Mueller remains an active member of the VCP Committee alongside members Dr. Cathy Cripps (**Image 7**), David Lewis (**Image 8**), Else Vellinga and Alisha Millican.

Image 6 2015 NC - Greg Mueller and Allein Stanley standing together in the display room. Photo provided by Greg Mueller.

Image 7 2008 McCall, ID - Portrait of Cathy Cripps sitting in front of a microscope. Photo by L. Gillman and provided by Michael Beug.

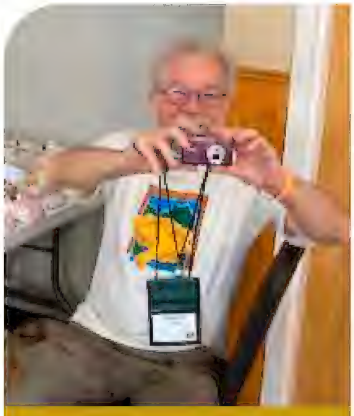


Image 8 2021 Granby, CO - David Lewis sparing photos with Andy. Photo credit: Andrew Wilson.

Image 9 2022 Missouri - Wyatt Gaswick takes photos of voucher specimens. Photo credit Andrew Wilson.

Wyatt Gaswick became a research intern with Mueller and Leacock in 2004. He then became the Field Museum Herbarium Collections Assistant in 2007. Gaswick worked as a student Voucher Assistant for the 2005 NAMA Annual Foray in Wisconsin and continues to work at the forays, where he serves as a VCP liaison with The Field Museum (**Image 9**). In this role, he has assumed the responsibility of accessioning voucher specimens and maintaining the digital integrity of all the specimens' metadata.

Andrew Wilson filled in for a student Voucher Assistant vacancy at the 2013 NAMA foray in Arkansas (**Image 10**).

Image 10 2013 Arkansas - Brian Looney, Andy Wilson, and Carol Camp observe a mushroom being held by Bill Yule.

After he moved to Chicago to become another postdoc under Greg Mueller, Patrick Leacock approached Wilson to become his eventual successor as VCP Committee Chair. Wilson continued as a voucher volunteer and began training to take over the VCP Committee in 2018. The transition of Chair and Coordinator responsibilities from Leacock to Wilson became official in 2021. Leacock remains on the committee as an advisor and liaison to The Field Museum.

The most recent addition to the committee, Liv Filialuna, joined in 2021 (**Image 11**). A student of Dr. Cathy Cripps, Filialuna served as a student Voucher Assistant for the 2019 NAMA Annual Foray in Paul Smith's College, New York. They were a student Voucher Assistant again in 2021, after which they joined theVCP Committee officially.

Image 11 2021 Granby, CO - Liv Filialuna photographs voucher specimens while Adele Mehta records voucher slips.

The alphabetized list of VCP Committee members, as of 2024, is as follows: Cathy Cripps, Olivia 'Liv' Filialuna, Wyatt Gaswick, Patrick Leacock, David Lewis, Adele Mehta, Alisha Millican, Greg Mueller, Else Vellinga, and Andrew 'Andy' Wilson. Past committee members include Allein Stanley, John 'Jack' Murphy, Betty Strack, among others. Ex-officio members include NAMA President Trent Blizzard and Chief Operating Officer Bruch Reed.

The Future of the VCP

In the 26 years since the beginning of the VCP, there has been significant change in technology and access to specimens and their information. The first, and perhaps most important change was the development of the Mycology Collections Portal (MyCoPortal), which went into operation in 2012. Within the MyCoPortal, anyone can search The Field Museum's fungal collections and look for NAMA specimens. Each year, once all of the specimen metadata has been sorted and organized, the data for that year is pushed to the MyCoPortal. As of 2024, there are over 8,400 specimen vouchers at The Field Museum, representing approximately 3,100 fungal taxa (with the majority identified to species). Given the size of the collection, the VCP plans to perform a more detailed examination of its collections' diversity and publish the results in the near future.

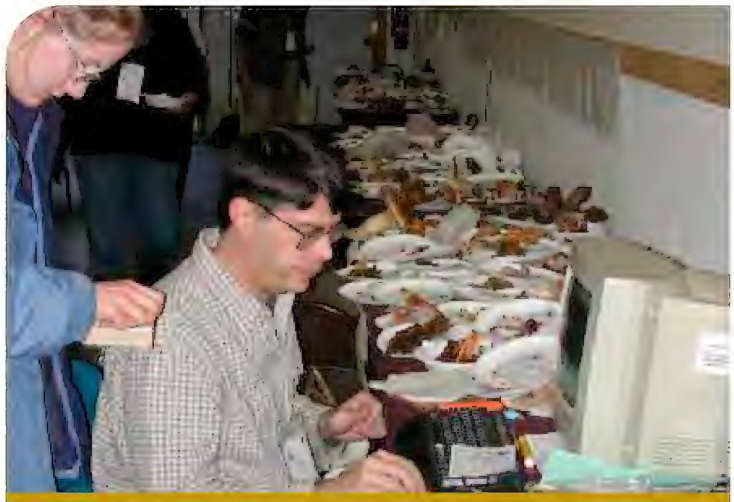


Image 12 2008 Idaho - Patrick Leacock recording a voucher slip into the database.

Over the years, the baseline vouchering techniques have not changed much (**Figure 1**; **Image 12**). However, tools offered by iNaturalist (iNat) and Mushroom Observer (MO) have enhanced opportunities to document mushroom diversity by simplifying the recording of important metadata through "observations." These observations enhance participation by foray attendees, allowing them to capture important specimen information that can be added to collecting slips. This data includes accurate geo coordinates, field photos and community identifications. Using iNat or MO observations enhances metadata and increases a specimen's value to science. iNaturalist has also helped to gather a wider view of the fungal diversity at the time of the foray by capturing observations of fungi apart from those specimens chosen to be vouchered

In recent years, growing public interest in fungi has translated into expanded collaborative efforts. A great example of this is the Fungal Diversity Survey (FunDiS). In collaboration with the NAMA's VCP, FunDiS produced a YouTube video on how to collect mushrooms for scientific research. Forming collaborations with synergistic organizations improves the quality of specimens and documentation of macrofungal diversity in North America. Among the challenges with which the VCP and groups like FunDiS have to contend are institutional barriers to community-science participation; specifically, how can amateur mycologists access museum specimens for study? Issues such as this require wider collaboration among amateur mycology and academic institutions that house collections. This is an area in which VCP Committee members are actively working in order to facilitate broader avenues for studying North American macrofungal diversity.

The future of the VCP is dependent on NAMA member interest. One area where the VCP can improve study of NAMA collections is through collaboration with other NAMA committees. In 2023, the new NAMA DNA Committee (DNAMA) was established. This committee is dedicated to investigating fungal

diversity using molecular methods. While DNAMA is involved in a wide variety of activities, its formation creates a formal process for sequencing specimens collected at NAMA forays. Currently, a loose structure for sequencing vouchered specimens exists at forays. Over the next several years we will see a growth in formal relations and workflows between the VCP and DNAMA, including sequencing and analysis of collections from the past 25 years.

With 25 years of vouchered specimens and data, the collaborative possibilities are extensive. However, continued input from the NAMA community is needed to continue the VCP's growth and relevance to the NAMA members. Working with other committees will support the VCP in being more widely understood and valued by a growing NAMA membership. This article is the first step and will be shortly followed by a paper investigating the scientific relevance of the NAMA collection towards understanding North American macrofungal diversity. For the next 25 years, the VCP Committee plans to continue vouchering foray specimens and providing opportunities to the next generation of fungal researchers. In the neverending pursuit of documenting North American macrofungal diversity, NAMA's Voucher Collections Project will continue its efforts to collect, preserve and study.

Acknowledgements

We wish to thank Cathy Cripps, David Lewis, Greg Mueller, Adele Mehta, and Else Vellinga for reviewing this manuscript; Michael Beug, Cathy Cripps, and David Lewis for donating photos. We also wish to thank the North American Mycological Association for the continued support of the Voucher Collection Project.

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Shock and Outrage

BY BRUCH REED, CHIEF OPERATING OFFICER/*MQ* EDITOR

As Duke University Announces Intent to Dismantle USA's 2nd-Largest Private Herbarium

One day before this *Mycophile Quarterly* was headed to layout, a Facebook post by Dr. Barbara M. Thiers alerted many in the mycology community to the alarming news that Duke University plans to eliminate its world-renowned herbarium. The unfortunate irony of the story coming out now, in the same edition in which we proudly celebrate NAMA's quarter-century of support for and achievements of our Voucher Collection Project, is not lost on this writer.

Founded a century ago, the Duke herbarium is the second-largest private herbarium in the United States. It houses approximately 825,000 specimens including, according to Stephen Russell of Hoosier Mushroom Society, 15,000 fungal specimens, among which are deposited at least 55 species type collections (the specimen that identifies a species as unique and establishes its formal scientific identity).

These collections represent at least one million hours of quiet, dedicated, irreplaceable work of collecting, studying, preserving, accessing and caring for these specimens. The Duke administration's decision is especially baffling given the institution's flush financial status, which includes an endowment of $11.6 billion (yes, that's billion, with a 'b').

Duke's drastic decision action begs many questions, both about the nature of higher education – which appears more and more to comprise a business, with its focus seeming to be something other than education – and about the future of herbaria all over the world; the small number of such state-of-the-art facilities as Duke have long provided secure repositories for tangible evidence of our planet's drastically dwindling biodiversity, to say nothing of the intrinsic value of basic scientific research into the natural world. Fungi, arguably the least-studied kingdom of life, are bound to get shortest shrift if Duke's action inspires other institutions to cut and run on a century and more of such vital basic-science achievement.

It has been suggested that the herbarium-killing decision may have been affected significantly by the "Duke University Research Fraud Scandal," which led to Duke agreeing to pay the U.S. government a $112.5 million settlement (plus nearly $34

million to the case's whistleblower) for faking medical research data in order to win Federal research grants.

From Dr. Thiers' Facebook post:

"I just heard the horrible news that Duke University plans to get rid of its 800,000 specimen herbarium. I learned this from a forwarded [email] message from a person associated with the herbarium. The forwarded message includes a letter from a Duke administrator that contains [the following]:

Barbara M. Thiers, PhD, serves as Vice President for Science Administration at New York Botanical Garden and as Patricia K. Holmgren Director of the William and Lynda Steere Herbarium. She is the author of *Herbarium: The Quest to Preserve & Classify the World's Plants* (Timber Press, 2020)

"'…we have carefully considered the requirements to maintain it in the manner in which it should be maintained, which would include multiple endowed faculty and staff lines as well as state of the art facilities. We have concluded that because of this large set of needed resources, it's in the best interests of both Duke and the herbarium to find a new home or homes for these collections. The collection deserves to be in a facility that has the resources to maintain it for posterity… We see this is a loss for Duke and we fully appreciate that it is also a major loss for each of you personally, as you have devoted your professional lives to the important work of creating, maintaining, and studying it. But, we do see it as a net positive in the long run for the collection and that is an important consideration.'"

"When a major collection closes, it endangers others. There must be a response from the botanical and the broader collections community." – Dr. Barbara M. Thiers, via Facebook

Dr. Britt A. Bunyard, editor and publisher of FUNGI Magazine, receives 2022 Gary Lincoff Award from John Lamprecht. Photo: Bruch Reed

Dr. Thiers' Facebook post quickly went the mycocommunity version of viral, provoking widespread shock and outrage on social media, with such mycological luminaries as Gary Lincoff Award Recipient Dr. Britt A. Bunyard of FUNGI Magazine and NAMA Executive Board members Dr. Barbara Ching and Alisha Millican to create equally dismayed postings. Prolific author and recent Appalachia NAMA 2023 Host Mycologist Arleen Bessette decries "the absurdity of thinking that you can just transfer 800,000 specimens to another institution...This is certainly the largest herbarium to be orphaned in the western hemisphere, maybe in the world." Dr. Michael Beug, who served many years as NAMA's Toxicology Committee Chair, says "These are indeed very sad times," noting the University of Washington's recent decision not to replace renowned retiring profession Dr. Joe Ammirati.

NAMA Past President Barbara Ching, a Duke alumna, shared the following thoughts:

> *"From the floor of Duke's 70-acre forest to the top shelves of the herbarium, Duke has built outstanding support for the biological sciences and the students who need and want to learn about the biodiversity of our ailing planet. As an alumna as well as the Past President of the North American Mycological Association, I can state that removing the herbarium from this edifice deprives students and scholars of an important historical and tangible scientific resource."*

Perhaps most personally affected by the decision is longtime NAMA Institutional Trustee Dr. Rytas Vilgalys, who established and has stewarded Duke's fungal collections. Reached for comment, Dr. Vilgalys emailed the following heartfelt response:

"I'm still shocked and outraged about the Dean's decision to close our herbarium, and its rippling effect on plant and fungal diversity science. The question about housing a large herbarium has been hanging over my department for many years now, part of a long trend in Biology Departments to get rid of 'antiquated' scientific collections. [Although] The reasoning for this decision is also attributed to the high cost of maintaining the collection, it also reflects the scientific/academic priorities of my administration. For me personally, it also means that I will need to find a new home for our collections before I can retire. The decision will have long-term consequences for how we train future students in plant and fungal biodiversity at Duke and elsewhere." – Dr. Rytas Vilgalys, via email.

Dr. Rytas Vilgalys, NAMA Institutional Trustee, established and built the Duke herbarium fungal collections.

Arleen Bessette points out the cruel irony that Dr. Rytas Vilgalys' Mycology Lab at Duke is set to host the Middle Atlantic States Mycology Conference (MASMC) this April.

The Duke Chronicle ran a story by Claire Cranford in its February 15 edition, including the following statement by Kathleen Pryer, who has served as Director of the Duke Herbarium since 2005: "Duke will never be a leader in biodiversity like it was before. [The Duke Administration] just never discussed with us, never had any conversations… [to] see what we can do." Pryer says the announcement came as a "slap in the face to those of us who devoted our lives to this kind of research." In an email to *The Duke Chronicle*, Pryer notes that the administration brushed aside proposals to secure funding and construct a new home for the facility, stating that "a Duke donor contacted me with a $3 million proposal, and he wanted to contribute the first $1 million. That is when Duke showed its true hand, and rather than use that as a springboard, they told us to shut down."

Pryer further states that Duke's decision has far-reaching implications for scientists researching climate change and biodiversity, who use the herbarium for

sequencing genomes, planting seeds of decades-old plants, and discovering "new" cryptic species to combat climate-change-driven mass extinction. Pryer sardonically writes, "What a way for Duke to celebrate its Centennial commitment to global biodiversity and climate change! Getting rid of its 100-year-old herbarium!"

The Duke Chronicle piece mentions that Duke administration official Kathryn Kennedy emailed to admit that conversations with a potential major donor had taken place but stated that the cost of maintaining the herbarium, as well as its staff and faculty positions, would be at least $25 million.

Duke Dean of Natural Sciences Susan Alberts told herbarium staff that the majority of herbarium should be moved "within the next two to three years" but again, so far Duke has provided zero details of any such specimen-liquidation plan.

The Duke Chronicle further notes that herbarium staff deems it an impossible task to relocate 825,000 specimens in such a time frame. "It's not something you just unload on somebody," says Pryer.

3:49
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Matt Johnson, PhD
@mossMatters
Follow
Duke's destroying a globally recognized generational legacy. I know 15 biology faculty and curators who trained at Duke's herbarium, just in my 10 years there. 2023's Climate Commitment "for life"? A budget is a moral document and Duke has shown its cards.
'A tragic mistake': Decision to close Duke University's...
From science.org
9:13 AM · Feb 17, 2024 · 25.9K Views
123 Reposts
5 Quotes
254 Likes
13

Tweet from Matt Johnson, PhD, Texas Tech University Associate Professor. It depicts Duke Herbarium Director Kathleen Pryer holding *Gaga monstraparva*, the "Lady Gaga fern" (inset photo by Chris Hildreth).

Following is an email excerpt from Assistant Curator for Fungi for the University of West Alabama Herbarium, Alabama Mushroom Society president and NAMA At-Large Trustee Alisha Millican, to Duke Dean of Natural Sciences Dr. Susan Alberts:

"...I am writing... to express my extreme disappointment that the second-largest private university herbarium in North America values its scientific collections so little... This [decision]... will hinder the scientific community as a whole when a collection of this size is split up and moved around the country.

At this time in history when so many species are going extinct, establishments like yours should be prioritizing the study of biodiversity. I find it abhorrent that Duke spends what they do on the athletics [over $148 million in 2021, according to collegefactual.com] but can't allocate funds to properly care for a historic collection of plants and fungi of this size and significance. It is truly shameful.

"I implore you, and those in charge of this decision, to reconsider. The greater scientific community is aware of what is happening and we want to be very clear that we expect better from Duke." – Alisha Millican

Duke University Sports Information

$150,517,681
TOTAL REVENUE

23
HEAD COACHES

$148,026,188
TOTAL EXPENSES

Dr. Alberts' emailed response is as follows:

"Thank you for your email. It is indeed true that academic leaders in Duke's Trinity College of Arts & Sciences have made the difficult decision to relocate the Duke Herbarium. Discussions have already begun with respected and established organizations who may become the recipients of its specimens.

"The herbarium is a highly valuable research collection that has been more than a century in the making; it has been expertly curated and studied by Duke faculty, staff and students as well as many scholars beyond our campus. However, it is currently housed in outdated facilities that will require significant funds and years of displacement to upgrade. The time has come for Duke to seek a safer, state-of-the-art home for the herbarium in order to ensure its preservation for the future.

"It will be a loss for Duke. But I can assure you that numerous possible alternatives were considered before arriving at this decision. We anticipate that the herbarium's successful relocation will occur in the next 2-3 years, and research utilizing the specimens will continue once it is in a new, permanent home.

"Due to the volume of email I am receiving, further correspondence may not be possible. But thank you again for your interest in this topic, and for your email."

NAMA members, members of affiliated clubs and others in the research-science/biodiversity advocacy community can take the following steps to express their feelings to Duke:

First, a change.org petition protesting the herbarium's closing was quickly set

up by Jillian Goodwin of Gainesville, Florida and, at the time of this writing, it had amassed over 10,000 signatures in 6 days. You can read and sign it at the link below or scan the QR code with your smartphone to access it:

To View and Sign the Change.org

Click Here

Or Scan the QR Code

https://www.change.org/p/urge-duke-university-to-reconsider-closing-their-herbarium

Following is a list of relevant direct contacts at Duke University:

DR. EMILY S. BERNHARDT
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DR. GARY G BENNETT
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KATHRYN KENNEDY
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DR. VINCENT E. PRICE
President
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A Burnt Offering:

Mycological Musings on *Rhizina undulata*

Rhizina undulata in Haiti, courtesy Wikipedia (CC BY-SA 3.0).

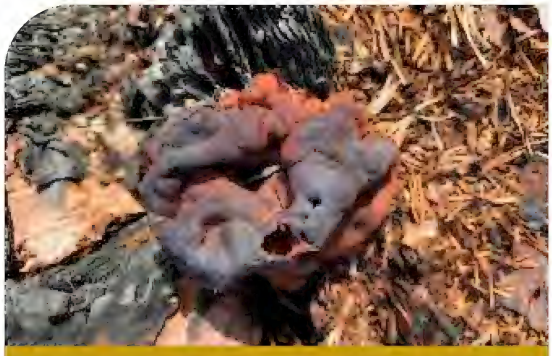
BY LAWRENCE MILLMAN

Here in New England we tend not to have post-fire morels (*Morchella tomentosa*), but we do have another post-fire species, *Rhizina undulata*, that's a close relative of morels.

Both are in the order Pezizales, which means both are discomycetes, and both spread their spores by the operculate dehiscence of their asci. Both are more or less hollow inside, too. There's one significant difference, though: *R. undulata* is not even remotely edible, so you'll never see hordes of commercial pickers searching for specimens in these parts.

Rhizina undulata fruiting from conifer base (photo: Lawrence Millman).

In October of last year, I happened to be looking for fungi in the Queen's River Nature Preserve in Exeter, Rhode Island. Or rather, in what was left of it; in April, a wildfire had rampaged through a primarily coniferous part of that preserve, burning down or at least dramatically charring a goodly percentage of the trees. Such rampaging is much easier in a coniferous forest than in a deciduous one because of the heaps of needle litter, the resinous content of the needles and the serotinous nature of the evergreens' cones.



Rhizina undulata fruiting out of blackened wood (photo: Lawrence Millman).

But out of death comes life! Virtually everywhere I looked, I saw fused clusters of *R. undulata*, many of which were circling snags or the charred trunks of white pines—hence the species' common name of "doughnut fungus." These clusters were reddish-brown in color and affixed to the ground by a tangle of rootlike hairs. Some were wavy or wrinkled, like morels, and the fresher ones were shiny. Rather than reach for our cameras, my companions and I simply stared at this unusual fruiting.

R. undulata is something of a paradox: a wood-inhabiting species that begins its life in the soil—invariably alkaline soil. "Burn, baby, burn" proclaim its long, spindle-shaped spores, for they require the heat of a fire in order to activate. Indeed, the heat in the soil must be at least 100 degrees Fahrenheit for them to germinate.

Like the spores of many other ascomycetes (but not very many basidiomycetes), *R. undulata*'s spores are homothallic, which means they're self-fertile, and so they have no need to go out and search for a suitable mate! The resulting mycelium often advances through the soil in the manner of a fairy ring. Given that there's been a fire in the area, that mycelium will soon find an appropriate woody-plant host and, upon doing so, will penetrate the tissues in that host's roots and then engage in the activity known as root rot. Since the roots are necessarily compromised due to both the terrestrial fire and the subterrestrial heat, the fungus probably ought to be called a saprobe rather than a parasite.

The jury is still out as to what might have caused the fire in the Essex preserve and, as a result, inaugurated the growth of all the *R. undulata*. It might have been caused by a spark from an ATV, or it might have been a runaway campfire used made to prepare coffee, which is the reason that "coffee fungus" is another common name for *R. undulata*. Yet another common name would seem a bit more appropriate: "pine fire fungus."

Climate change could be a factor for, if not for this particular fire, at least a good many other conflagrations. After all, forest fires are becoming a lot more prevalent due to the drought-like conditions inspired by rising temperatures. I suspect that so-called phoenicoid ascomycetes will become more prevalent, too. Other examples besides the two I've mentioned are *Peziza violacea*, *Geopyxis carbonaria*, *Pulvinula archeri*, *Tarzetta cupularis*, and certain *Plicaria* species.

I was bent over and studying one of the *Rhizina* with my hand lens when a fellow who was walking his dog approached me and asked, "What's that you're looking at?" Before I could reply, one of my companions said, "Something that's really cool." The other companion added, "And something that could be called really hot, too."

Rhizina undulata drawing by Loren Hoekzema.

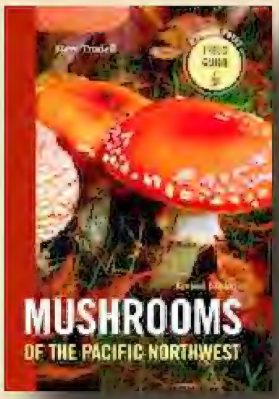
NAMA

Reads

Explore Captivating Literature Dedicated to Mushrooms and Mycology.

Mushrooms of the Pacific Northwest, Revised Edition, by Steve Trudell

BOOK REVIEW BY MELODIE GATES, TREASURER



Timber Press 2024
416 pages; 530 photographs
$25.00 flexicover
ISBN-10: 0226829634
ISBN-13: 978-0226829630

Steve Trudell is affiliate curator in the Burke Museum Herbarium at the University of Washington. Together with Joe Ammirati, he co-authored *Mushrooms of the Pacific Northwest* in 2009. He is a forest ecologist who has been hunting, photographing and studying mushrooms for over 40 years. Steve is a longtime member of the North American Mycological Association, Mycological Society of America, and International Mycorrhiza. He has capably reviewed many books for *The Mycophile*.

Mushrooms of the Pacific Northwest, Revised Edition, published in 2022, is well laid out, with lots of very good photographs (530 photos) describing 493 mushroom species in detail. While this book is beautifully presented, I must note that it is much better aimed at the beginning taxonomist and not so much the pot hunter. It will be a wonderful resource to add to your club's shelf or public library.

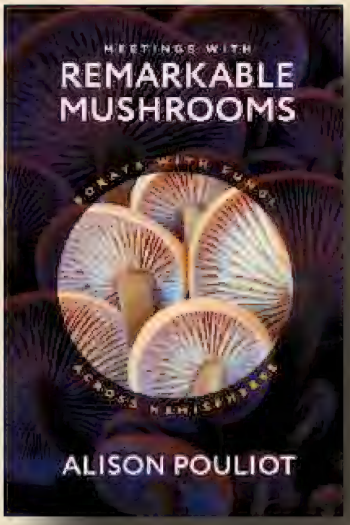
I find the "Preliminaries" section very informative for the new mushroom hunter as well as an excellent and well-written overview of mycology. Necessary collecting equipment is listed and described, as well as the hazards you might encounter while collecting mushrooms in the woods. The review of the basics of mycology is easy to understand and includes information on how to do a spore print, and why it is vital to know if a mushroom is edible or poisonous. The book explains in fine detail where and when to hunt for mushrooms, as well as delving into specific about access to collecting areas in the Pacific Northwest.

As a field guide, I do find some frustrations; the descriptions tend to compare one mushroom to another instead of describing the individual mushroom's characteristics, such as whether the cap is viscid or if the mushroom is growing from wood or soil. These are the characters that a new mushroom hunter is wanting to know in order to narrow down the identity of the mushroom she has found in the field. Trudell has used Latin binomial scientific names, which is wonderful for the avid student of mycology but can be intimidating or confusing for the newbie pot hunter. For a beginner, it could be tricky to find a description of, for example, the matsutake, unless you know the scientific name *Tricholoma murrillanum* (previously known as *Tricholoma magnivelare*).

Overall, I recommend this book as a beautiful, portable and a valuable resource for mycologizing in the Pacific Northwest—which just happens to be where NAMA is heading for this year's Annual Foray!

Meetings with Remarkable Mushrooms: Forays with Fungi Across Hemispheres, by Alison Pouliot

BOOK REVIEW BY GYORGYI VOROS



University of Chicago Press, 2023
278 pages, including a Species Register, Glossary and Selected Sources
$26.00 hardcover
Illustrated with author's photographs
ISBN-10: 1643260863
ISBN-13: 978-1643260860

In her latest book, ecologist and environmental photographer Alison Pouliot takes the reader on a whirlwind tour of numerous habitats across the globe where she shows off fungi in all their infinite, sometimes bizarre manifestations. In Grampians National Park, Australia, for example, we learn of pyrophilous (fire loving), carbonicolous (charcoal inhabiting) and phoenicoid (growing from ash) mushrooms that heal and rebuild fire-damaged soils. We learn about the fire-adaptive tactics of certain fungi like a truffle in the *Mesophelia* genus, which replaces its ordinary nut-like odor for a rotten-onion stink, more detectable (and apparently delectable) over the smell of char to the animals that disperse its spores. A nighttime walk along Rossiter Bay reveals ghost fungi, *Omphalotus nidiformis*, which glow in the dark and which opens a discussion to the science of bioluminescence. Other excursions lead to explorations of parasitic fungi; of the relationships between fungi and animals; of endangered fungal species with extremely limited geographical ranges; of fungal responses to climate change; and of fungal invaders. Who knew that the charismatic, polka-dotted "fairytale

mushroom," the fly agaric or *Amanita muscaria* has so charmed Australian mycophiles that they now ask how to grow it in their gardens, and that it has been a "regulated pest" in Australia since 2001?

As the book's subtitle indicates, Pouliot's peripatetic wanderings range across hemispheres from Australia and New Zealand to Switzerland, Iceland and the U.S. Pacific Northwest, though in truth, the bulk of the book focuses on Australian habitats with relatively brief passages devoted to the other locations. Pouliot is an enthusiastic and knowledgeable raconteur of fungal lore and fungal science, so much so that one senses that she can barely contain herself for all the astonishments she wishes to share with readers. Thus, the book is comprised of many short essays on a plethora of topics, creating at times a somewhat slapdash affect. The abundance of facts occasionally devolves to lists of factoids as, for example, in a chapter that inventories the Indigenous names of a particular fungus with little discussion of their significance to the Indigenous groups who named them. A highly telescoped review of the history of science during and after the Enlightenment leaves the reader longing either for more depth and nuance or, better yet, trust in the reader to know the basic gist enough to get the point of the discussion, which is the limitations and omissions of Western science.

Nevertheless, despite these few shortcomings, Pouliot's book is invaluable for reasons that far exceed the entertaining mycological-grand-tour theme. The real essence of the book lies in its impassioned argument for fungal conservation which is, of necessity, habitat conservation and the conservation of entire ecosystems. While the book reviews the prime culprits in the ongoing fast-track devastation of fungal habitats—agriculture, logging, climate change and what we call "development"—Pouliot's arguments for conservation unfold by way of several quite original, non-technological, extra-scientific approaches.

First and foremost is Pouliot's faith in and advocacy for local knowledge. While her own travels range far and wide, in each location the author visits she seeks

out those who know the land and its fungi from sustained, decades-long careful observation of particular, well-loved tracts of land. In the case of the Indigenous groups she consults—for example, the Yorta Yorta Aunties who are the Traditional Custodians of Barmah National Park or the Maori in New Zealand's Milford Sound region—that knowledge is often centuries if not millennia old. Or at least it would be, had it not been for the Europeans who disrupted traditional cultures, forbade the use of native languages and ceremonies embodying the native relationship to the land. Some of those stories and traditions have survived; many native groups are systematically resurrecting them, and with them the understanding of the uses for fungi as medicine, as dyes, as food and as critical components holding together entire ecosystems.

Local knowledge, Pouliot repeatedly emphasizes, is embedded in sensory, bodily experience. Of one guide, she writes that his "knowledge of the forest came from reading it through his body, through the senses, *in situ*." The author recalls the shock she experienced the first time she smelled candy caps in the Pacific Northwest, and she exults over the tactile qualities of mushrooms, which can range from velvety to fleshlike to gelatinous, or can bruise or change color at touch. She stresses repeatedly that no amount of laboratory work substitutes for sustained observation over time with full bodily immersion in the surrounding environment.

In this regard, Pouliot follows in the footsteps of other women scientists who have critiqued Western science's touted "objectivity." Scientists such as Jane Goodall and Diane Fossey in primatology come to mind, as do the anthropologist Anna Tsing, the botanist Robin Wall Kimmerer and the forest ecologist Susan Simard. Like them, Pouliot insists that data alone is not knowledge, and she repudiates that purported Western objectivity, refuses to separate self and body from the body of the Earth that she studies. She acknowledges the relationship based in respect and yes, love, between the observer and the thing observed. To conserve fungi, one must think like a fungus!

It is this generous allowance for the role of feeling and personal connection that leads to the second component Pouliot regards as essential for the conservation of fungi, namely aesthetics. Certainly, tools such as Red Lists, data collection and legislation are critical but, argues Pouliot,

"Less often explored… are the tensions between fungi, aesthetics and conservation, and how our perceptions as humans shape the ways we regard and value fungi… How do we negotiate the intersections of aesthetics and conservation to rally public support and ensure best-practice conservation? Can art and aesthetics serve as tools for inspiring greater appreciation of fungi?"

Aesthetics can be a double-edged sword. The public can become fixated on the showiest of species: Pouliot notes the "dazzling waxycaps," a genus of mushrooms noted for their rainbow colors and translucent flesh. Nevertheless, aesthetics, she argues, is a gateway to appreciating fungi and from there, one hopes, working to conserve them and their habitats. And, because their habitats enshroud the globe, fungal conservation implies the conservation of all critical ecosystems. The author reviews the oft-overlooked historical connection between science and aesthetics as an early driver of conservation movements, and the role of the latter is conveying and translating scientific ideas to a wider public.

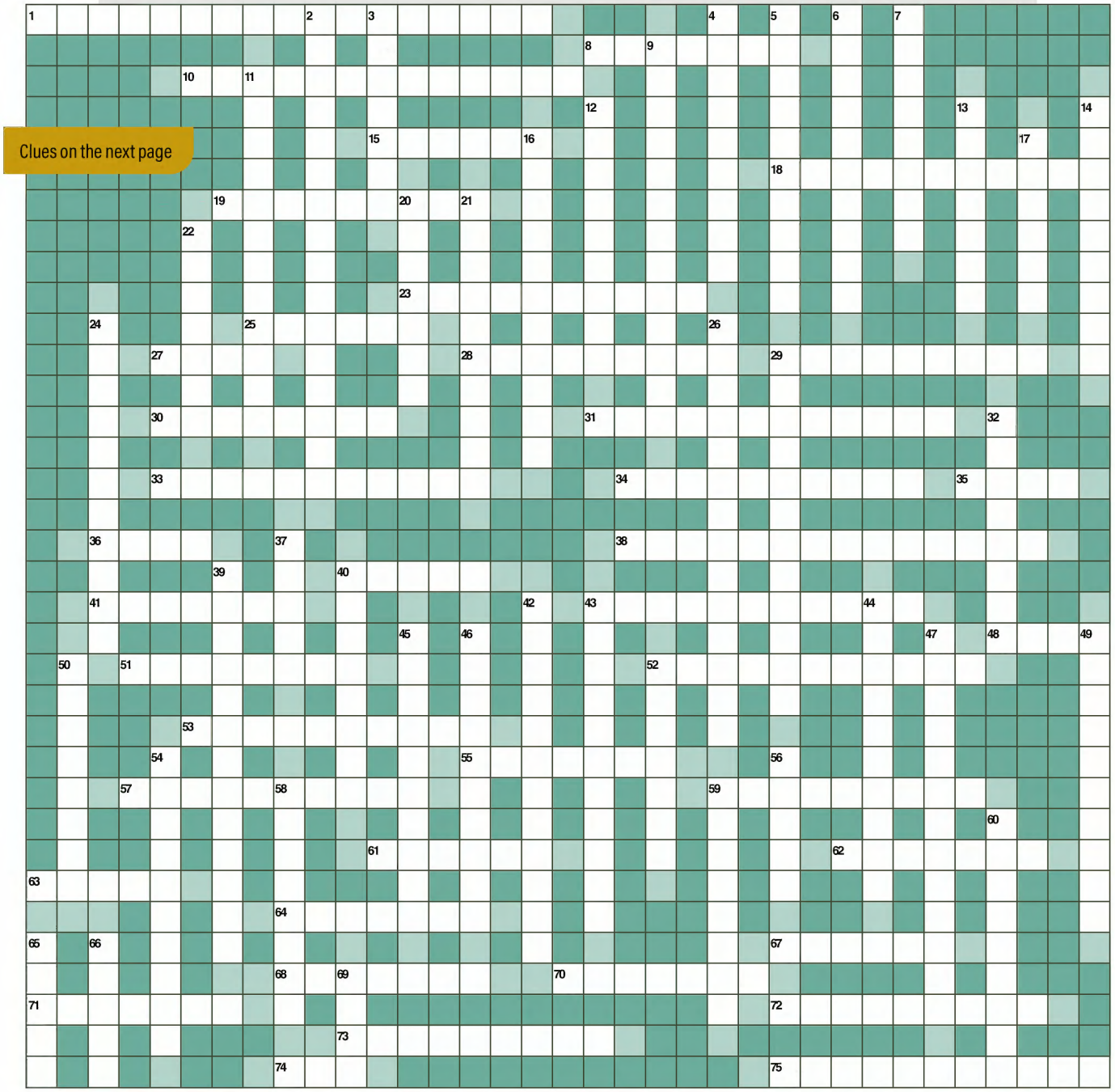
The last third or so of the book is devoted to an impassioned argument for conservation and the means by which it can be pursued effectively. Lest the task seem Herculean for any one person, Pouliot introduces the reader to individuals who have, in their own backyards, restored entire habitats. One memorable example is Kazuko Yamamoto who, after spending her life designing gardens in Hokkaido, moved to a 120-acre farm in Australia where she has rebuilt "the architecture of soils, created habitats for other organisms and restor[ed] ecosystem processes and complexity."

How does one care for and restore a damaged planet? Pouliot lets Yamamoto have the last word on that: "Keep noticing, responding, connecting deeply, giving, loving. But maintain the rage. It's all part of caring."

NAMA Crossword

NAMA members have been clamoring for a mycothemed crossword; here you go! As I hope you might expect, answers all relate to NAMA, mycology, mycoauthors and personalities, foraying and, of course, fungi! Don't hesitate to google if you find yourself stumped; lord knows I did—but faithful *MQ* readers will likely have an advantage (hint hint)!

Clues on the next page



Across

1 "River Teacher" *Psilocybe*
8 towering Todd, "The King of Mushrooms"
10 fungal-chum groups
15 yer "flush" marketing maven
18 mushroom "seeding"
19 Iberian "gain" + skin
23 genus of envy-hued psittacine
25 pleasing fungus ___
27 current count of officially mushroomed states
28 cat-king's ruff
29 one mode of living
30 circular annelid contagion
31 on *Quercus,* bald bark betokens
33 *Life*'s Indigenous *curandera*
34 a fairyfire fungus
35 pectinous medium
36 old = not ___
38 one who can name many
40 Past President (*cha-*___)
41 red/green is even tastier than excellent orange
43 *aussi "girolle," en francais*
48 viscid PNW banana
51 UK "St. George's" genus
52 timber-broad tangle
53 makes macro
55 "Fungi" until 1969
57 saprobe
59 when it rains, these pour forth
61 fungal integument
62 "Just Another ___"
63 VCP Recorder rollin' in the deep
64 ...*The Secret Lives*... author
67 was twofer, now threefer
68 late, great Gary
70 "tunesome" Treasurer
71 longtime VCP Chair
72 genus of "burns" and "naturals"
73 fungus fan

Down

2 prawn-of-the-[Celtic]-"*fee*"
3 maybe Metamucil-noggin genus
4 1st official-mushroom state
5 *Chlorociboria*
6 dark-agenda'd "angel"
7 spirits-steeped
9 a raggedy margin is
11 *Fantastic Fungi* maker
12 NAMA-founding mycopowercouple
13 also shelf
14 has his very own polypore
16 genus Catalans consume with gusto
17 "golly Mister [current VCP Chair]!"
20 coloring chemical
21 humongous fungus genus
22 "The King"
24 *Galerina* "*dong*!"
26 bruin's bean-gnawer
29 penned *Cordyceps*-cultivation tome
32 "The Prince" epithet
37 convene to collect
39 doddering sylvan fella
40 "Golden Teacher" *Psilocybe*
42 two-step essential ID diagnostic
43 *Terana caerulea*
44 COW, kinda
45 tree-shroom handshake
46 ewe pate
47 inky melting
49 golden grand giggler genus
50 frigid powerful Prez
52 vino lid
54 plush tootsie
56 chompy dispersal structure
58 wound-healer, per Hayden Tyler Johnson
59 operatic rust
60 *Alnus* adhesive
65 you can riffle them
66 hotel chain or rockstar NAMAZona shroomchef
69 continental mycoclub umbrella